Table 5.4. Area C (Borrow Pit) Emissions: Location and Dispersion Factors Used to Determine Maximum Air Quality Impacts to the Public

Averaging Time Period	Maximum Impact Location and Corresponding Public Access	Distance and Direction from Pollutant Release Location to Maximum Public Impact Location[(a)]	Dispersion Factors for Maximum Impact Location (s/m^3)[(b)]
1 hr	SR 240	<150 m NE	3.3E-3
3 hr	SR 240	<150 m NE	2.5E-3
8 hr	SR 240	<150 m NE	1.9E-3
24 hr	Hanford Site boundary	14.4 km WNW	1.0E-5
Annual	Hanford Site boundary	13.8 km WNW	9.2E-8

(a) Distance determined by dispersion modeling. Pollutant transport direction is reported using 16 compass sectors—starting with N (North) and continuing clockwise with NNE, NE, ENE, E (East), ESE, SE, SSE, S (South), SSW, SW, WSW, W (West), WNW, NW, and NNW.

(b) Values computed by the ISCST3 model. To convert to a concentration estimate ($\mu g/m^3$), the dispersion factor (s/m^3) is multiplied by the estimated pollutant release rate ($\mu g/s$).

5.2.1 Alternative Group A

Project activities that would generate air quality impacts under Alternative Group A include the use of diesel-fueled equipment to construct new trenches of deeper and wider design than current trenches, construction of the ILAW and melter trenches, backfilling of trenches, capping the LLBGs and the ILAW trench at closure, performing routine CWC and T Plant operations, modifying T Plant to achieve waste processing capability, and the excavation and transportation of materials from the borrow pit. In addition, propane-fueled pulse driers would be used to treat leachate from the MLLW trenches beginning in 2026. Fugitive dust emissions would be associated with many major construction, transportation, and operation activities.

For Alternative Group A (Hanford Only and Lower Bound waste volume), the largest air quality impacts would occur during two different periods of project operation. In 2006, ILAW trench construction and MLLW capping and backfill operations would be underway. The heavy use of construction equipment for short periods of time would produce the maximum 24-hour and shorter term average concentrations for SO_2 and CO. After disposal operations cease, LLBG and ILAW capping operations would be in full swing. This sustained activity would produce the maximum 24-hour and annual concentrations of PM_{10} and maximum annual concentrations of NO_2 and SO_2.

For Alternative Group A (Upper Bound waste volume), the largest air quality impacts would occur during three different periods of project operation. In 2006, the heavy use of construction equipment would produce the maximum concentrations over all averaging periods for CO, SO_2, and NO_2. In 2018, LLW and ILAW trench construction, coupled with MLLW melter capping and backfilling operations, would generate the maximum 24-hour PM_{10} concentrations. After disposal operations cease, LLBG and ILAW capping operations would be in full swing. This sustained activity would produce the maximum annual concentrations of PM_{10}.

Estimates of the maximum air quality impacts to the public from activities in the 200 Areas under Alternative Group A are summarized in Table 5.5. Estimates of the maximum air quality impacts from Area C activities are presented in Table 5.6. The maximum air quality impacts from Area C activities are the same for all Alternative Groups. The impacts from the single activity undertaken in Area C are less than the maximum impacts from the multiple activities undertaken in Alternative Group A.

Table 5.5. Alternative Group A: Maximum Air Quality Impacts to the Public from Activities in the 200 Areas

Pollutant	Averaging Time	Ambient Air Quality Standard ($\mu g/m^3$)	Hanford & Lower Bound Volume		Upper Bound Volume	
			Maximum Air Quality Impacts ($\mu g/m^3$)	Percent of Standard	Maximum Air Quality Impacts ($\mu g/m^3$)	Percent of Standard
PM_{10}	24 hr	150	69	46	74	49
	Annual	50	0.61	1.2	0.62	1.2
SO_2	1 hr	1,000	81	8.1	98	9.8
	3 hr	1,300	38	2.9	45	3.5
	24 hr	260	2.7	1.0	3.5	1.3
	Annual	50	0.017	0.034	0.019	0.038
CO	1 hr	40,000	1500	3.8	1900	4.8
	8 hr	10,000	470	4.7	590	5.9
NO_2	Annual	100	0.84	0.84	0.80	0.80

Table 5.6. All Alternative Groups: Maximum Air Quality Impacts to the Public from Area C (Borrow Pit) Activities

Pollutant	Averaging Time	Ambient Air Quality Standard ($\mu g/m^3$)	Maximum Air Quality Impacts	
			Maximum Pollutant Concentration ($\mu g/m^3$)	Percent of Standard
PM_{10}	24 hr	150	21	14
	Annual	50	0.19	0.38
SO_2	1 hr	1,000	260	26
	3 hr	1,300	200	15
	24 hr	260	0.44	0.17
	Annual	50	0.0035	0.0070
CO	1 hr	40,000	6300	16
	8 hr	10,000	3600	36
NO_2	Annual	100	0.16	0.16

Even in the years with the largest potential air quality impacts, ambient air quality standards (see Table 4.5, Section 4.3.2) would not be exceeded under Alternative Group A. The largest potential impacts to the public from activities at Area C would result from SO_2 and CO emissions. Maximum air quality impacts to the public are conservatively estimated to be about 26 percent of the 1-hour SO_2 standard and 36 percent of the 8-hour CO standard. The largest potential impacts to the public from activities within the 200 Areas would involve the 24-hour PM_{10} standard. Using the series of conservative assumptions employed in the air-dispersion modeling, this maximum air quality impact would be about half of the 24-hour PM_{10} standard.